

DESIGN AN ONLINE SCHOOL COMMUNICATION SYSTEM

A CASE STUDY OF MALAYSIAN SCHOOL

(SEKOLAH KEBANGSAAN BANDAR BARU SINTOK)

ALAA A ALKAFAGI

UNIVERSITI UTARA MALAYSIA 2011

DESIGN AN ONLINE SCHOOL COMMUNICATION SYSTEM

A CASE STUDY OF MALAYSIAN SCHOOL

(SEKOLAH KEBANGSAAN BANDAR BARU SINTOK)

A project submitted to Dean of Postgraduate Studies and Research in partial

Fulfillment of the requirement for the degree

Master of Science of Information Technology

Universiti Utara Malaysia

By

Alaa A Alkafagi

Copyright © February, 2011 Alaa A . All rights reserved



KOLEJ SASTERA DAN SAINS
(College of Arts and Sciences)
Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PROJEK
(Certificate of Project Paper)

Saya, yang bertandatangan, memperakukan bahawa
(I, the undersigned, certifies that)

ALAA A. ALKAFAGI
(802323)

calon untuk Ijazah
(candidate for the degree of) **MSc. (Information Technology)**


telah mengemukakan kertas projek yang bertajuk
(has presented his/her project of the following title)

DESIGN AN ONLINE SCHOOL COMMUNICATION SYSTEM: A CASE STUDY OF
MALAYSIAN SCHOOL (SEKOLAH KEBANGSAAN BANDAR BARU SINTOK)

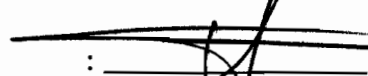
seperti yang tercatat di muka surat tajuk dan kulit kertas projek
(as it appears on the title page and front cover of project)

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan
dan meliputi bidang ilmu dengan memuaskan.
(that this project is in acceptable form and content, and that a satisfactory
knowledge of the field is covered by the project).

Nama Penyelia
(Name of Supervisor) : **DR. ABDUL JALEEL KEHINDE SHITTU**

Tandatangan
(Signature) :  Tarikh (Date) : **18/10/2010**

Nama Penilai
(Name of Evaluator) : **DR. MOHD KHAIRUDIN KASIRAN**

Tandatangan
(Signature) :  Tarikh (Date) : **18/10/2010**

PERMISSION TO USE

In presenting this project in partial fulfillment of the requirements for a postgraduate degree from Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this project in any manner, in whole or in part, for scholarly purpose may be granted by my supervisor(s) or, in their absence by the Dean of Postgraduate Studies and Research. It is understood that any copying or publication or use of this project or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my project.

Requests for permission to copy or to make other use of materials in this project, in whole or in part, should be addressed to

Dean of Postgraduate Studies and Research

College of Arts and Sciences

Universiti Utara Malaysia

06010 UUM Sintok

Kedah Darul Aman

Malaysia

Abstract

The purpose of this research is to develop a prototype for online communication system used at Sekolah Kebangsaan Bandar Baru Sintok Primary school. The online communication system will be used for communication mainly between parents and teacher that have students at the school. Methodology used to develop the system are two which are consider that is object method table (Norshuhada Shiratuddin, 2010) and requirements catalogue entry (Levi-Strauss, 2009). The design of the system was carried out through following each of these stages that were used in system development awareness of the problem which is initiation investigation into the problem area, suggestion which was used as the requirements gathering process, development which is the system design phase, evaluation where necessary testing methods were carried out, and documentation and report findings which was also considered as the last stage of system implementation. The findings that were made concerning the online communication system some of the functions that were supposed to be used in the system where not considered. Lack of information during gathering requirements also contributed to less information being made available when it comes to developing a working system not just a prototype. The unavailability of adequate resources which could be used to develop the system had an impact on the system interface which if applied could have made it possible to come up with a well designed prototype system that could be used in primary schools for communication. The relaying on the correlation model used is not considered as it has been noted to have some variation when it comes to assessing values of questionnaires made and this can also change as some of the answers provided on questionnaires may be

biased. The system users contributed a lot in making sure that some of the usability issues that were faced could be addressed before implementing the system for use.

Acknowledgement

By the name of Allah, the Most Gracious and the Most Merciful

I would like to thank Allah for having made everything possible by giving me strength and courage to do this work.

My thanks go to everyone that gave me a minute of his/her time to help me finish this project. I would like to thank my supervisor Dr. Abdul Jaleel Kehinde Shittu for his advice and supervision during the preparation of this project. I'm gratefully and deeply thank him for his support and cooperation as being equipped to provide his best help.

Furthermore I would like to thank my Parent, my wife and my children for their support and kindness as well as my lecturers at the faculty of Information Technology with the information they gave me to finish my project, especially my evaluator Dr. Mohd Khairudin Bin Kasiran and Assoc. Prof. Dr. Wan Rozaini Bt Sheik Osman, I would like to thank the administration staff at Sekeloh Kebangsaan Bandar Baru Sintok primary school. May Allah bless all of them?

TABLE OF CONTENTS

PERMISSION TO USE -----	ii
ABSTRACT -----	iii
ACKNOWLEDGEMENT -----	iv
TABLE OF CONTENTS -----	v
LIST OF TABLES -----	x
LIST OF FIGURES -----	xii
LIST OF ABBREVIATIONS -----	x iii
 CHAPTER ONE: INTRODUCTION	
1.0 Introduction -----	1
1.1 Problem Statement -----	3
1.2 Research Question -----	4
1.3 Research Objectives -----	4
1.3 Research Scope -----	4
1.4 Significant of Research -----	5
1.5 Organization of Study -----	6
1.6 Summary -----	7
 CHAPTER TWO: LITERATURE REVIEW	
2.0 Introduction -----	8
2.1 Online Communication-----	8
2.2 Type of Online Communication -----	9
2.3 Class Connection SIPInternet System-----	9
2.4 Inter-Tel Integrated Communication Solution-----	11
2.5 Ues of Online Communication System-----	13
2.6 Communication between Parent and Teachear-----	14
2.7 Summary -----	16
 CHAPTER THREE: RESEARCH METHODOLOGY	
3.0 Introduction -----	17
3.1 Objective Method Table(OMT) -----	18
3.2 Design Research Methodology-----	20
3.3 Awareness of Problem (Initial Investigation)-----	22
3.4 Data Collection (Gathering Information) -----	22
3.5 Suggestion-----	23
3.6 Development (System Design) -----	24
3.7 Evaluation -----	24
3.8 Requirements -----	25
3.8.1 Requirements Catalog Entry-----	25
3.8.2Functional Requirements -----	26
3.8.3 Non Functional Requirements-----	28
3.9 Summary -----	35

CHAPTER FOUR: ANALYSIS AND DESIGN

4.0 Introduction	36
4.1 Proposed System	36
4.2 Use Case Diagram	37
4.2.1 Use Case	37
4.2.2 Actor	37
4.2.3 Association	37
4.2.4 System Boundary	38
4.3 Use Case Specification	40
4.3.1 Basic Flow.....	40
4.3.2 Parent Information Flow.....	40
4.3.3 Teacher Information Flow.....	42
4.3.4 Student Information Flow.....	44
4.4 Entity Relationship Diagram	46
4.4.1 Finding Relationship.....	47
4.4.2 Rough ERD	47
4.4.3 Filling Cardinality	48
4.4.4 Defining Primary Keys.....	49
4.4.5 The Key Based ERD.....	49
4.5 Activity Diagram	50
4.5.1 Activity Diagram for Parent.....	50
4.5.2 Activity Diagram for Teacher.....	52
4.6 Sequence Diagrams	53
4.6.1 Parent Sequence Diagram	53
4.6.2 Collaboration Diagram for Parents.....	55
4.6.3 Teacher Sequence Diagram	55
4.6.4 Collaboration Diagram for Teacher.....	57
4.7 Database Design	57
4.8 Teacher Table	58
4.8.1 Parent Table	59
4.8.2 Student Table	60
4.9 The System Design Interface for Online Communication System	60
4.9.1 Teacher Page	61
4.9.2 Parent Page	61
4.9.3 Student Page	61
4.10 Home Page	61
4.10.1 User Login Page	62
4.10.2 Teacher Page	63
4.10.3 The Send E-Mail page	65
4.10.4 Parents Main Page	65
4.11 Summary	66

CHAPTER FIVE: RESULTS

5.0 Introduction	67
5.1 Evaluation Techniques	67

5.2 Evaluation Questionnaire -----	68
5.3 Data Analysis -----	68
5.4 Respondent Profile Analysis -----	69
5.5 Internet Usage -----	70
5.6 Race Distribtion -----	71
5.7 Responeded Distribtion -----	71
5.8 Descriptive Statistics for All Sections-----	72
5.9 Correlation Statistics -----	73
5.10 Summary -----	75
 CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS	
6.0 Introduction -----	76
6.1 Conclusion of the Study -----	76
6.2 Study Contributions -----	76
6.3 Problems and Limitations -----	77
6.4 Future Works -----	77
6.5 Recommendations -----	78
6.6 Summary -----	78
 REFERENCES -----	80
 Appendix (A) -----	84

LIST OF TABLES

No	Name of Tables	Page
3.1	Object Methods Table (OMT)-----	18
3.2	Functional Requirement -----	23
3.3	Requirement Catalogue Entry -----	25
3.4	Functional Requirement(teacher ,parent ,student)-----	26
3.5	Non Functional Requirement -----	28
3.6	Benefit -----	32
3.7	Comments/suggested Solutions -----	33
3.8	Related Documents -----	34
3.9	Related Requirements-----	34
3.10	Resolution -----	35
4.1	Parent Information Flow -----	41
4.2	Teacher Information Flow-----	43
4.3	Student Information Flow -----	45
4.4	Entity Relation Matrix-----	47
4.5	Teacher Table -----	58
4.6	Parent Table -----	59
4.7	Student Table -----	60
5.1	Descriptive Statistics -----	73
5.2	Correlation Description Statistic -----	74
5.3	Pearson Correlation Statistics -----	74

LIST OF FIGURES

No	Name of Figures	Page
2.1	Traffic Information System Architecture Adapted -----	14
2.2	Interaction between Teacher and Parent -----	15
3.1	Design Research Methodology (Vaishnavi & Kuechler, 2004) -----	21
4.1	Use Case Diagram for Online Communication -----	39
4.2	Connection of Entities -----	48
4.3	The Primary Key for each and every Table -----	49
4.4	Activity Diagram for Parent -----	51
4.5	Activity Diagram for Teacher-----	52
4.6	Parent Sequence Diagram -----	54
4.7	Collaboration Diagram for Parent -----	55
4.8	Teacher Sequence Diagram -----	56
4.9	Collaboration Diagram for Teacher -----	57
4.10	Home Page -----	62
4.11	Login Page -----	63
4.12	Teacher Page -----	64
4.13	Manage Attendance -----	64
4.14	Sending E-mail to Parent -----	65
4.15	Parent main Page -----	66
5.1	Illustrate the Gender of the Respondents -----	69
5.2	Illustrates the Respondent Usage of the Internet -----	70
5.3	Race Distribution -----	71
5.4	Responded Distribution -----	72

CHAPTER ONE

INTRODUCTION

1.0 Introduction

The online communication system is an application being developed to meet the needs of parents, and teachers when it comes to communication especially looking into Sekolah Kebangsaan Bandar Baru Sintok primary school where there is less communication due to limited technology availability.

Information and communication technology offers new possibilities for improving existing education system. Distance education methods which carry numerous possibilities in every organization of education process from almost unlimited time, space, and communication possibilities to learning methods. Having that in mind it is important to find the best possible provision of new methods that will be sufficiently in accordance to the conditions and needs incorporated in education system. Moreover information and communication technology is essential part of modern education notably because of numerous possibilities and advantages which that technology brings to education as well as for better achievement of set education goals (Vuksanovic, Zovko-Cihlar, & Boras, 2007).

The contents of
the thesis is for
internal user
only

References

Alhir, S. (2003). *Learning UML*. Canada: O'Reilly.

Ambler, S. (2009). *The Elements of UML(TM) 2.0 Style*. New York: Cambridge University.

Carb'O, J.M., Mor, E. & Minguill'On, J. (2005). User Navigational Behavior in E-Learning Virtual Environments. *Proceedings of the 2005 IEEE/WIC/ACM International Conference on Web Intelligence (WI'05) held on 19-22 Sept. 2005 at WIC* (pp. 243 – 249). Washington: IEEE Computer Society.

Class Connection. (2009). *Communication System Solutions for Large Sophisticated Environments*. Retrieved 07 July 2010, from <http://www.class-connection.com/pdfs/productguide.pdf>

Cummings, T. (2008). *Data Modeling and Entity Relationship Diagrams*. Retrieved 18 August 2010, from <http://www.google.com/#hl=en&source=hp&q=entity+relationship+matrix&aq=0&aqi=g1&oq=entity+relationship+mat&fp=8ec9ea851cee2c5b>

Dickinger, A., Heinzmann, P., & Murphy, J. (2005). Mobile Environmental Application. *Proceedings of the 38th International Conference on System Science held on 03-06 Jan. 2005 at (HICSS-38) (pp 178a - 178a)*. Hawaii: IEEE

Computer Society.

Egeberg, M. (2006). *The Mobile Phone as a Contactless Ticket*. Trondheim :Norwegian University of Science and Technology.

Inter-Tel. (2006). *Inter-tel 7000 Network Communications Solutions*. Retrieved 07 July 2010, from http://www.buyerzone.com/telecom_equipment/phone_systems/brochures/Inter-Tel7000Brochure.pdf

Isa, P. M., Abu Samah, S. A., Jusoff, K. (2008). Inculcating Values and Ethics in Higher Education E-Learning Drive: UiTM I-Learn User Policy. *Engineering and Technology*, 38, 2070-3740.

Matsumoto, T., Matsukura, R., & Ito, H. (2000). Chocoa Communicator-A New Communication System Based on Awareness and Text Communications. *FUJITSU Sci. Tech. J*, 36(2), 154 – 161.

Modern Analyst, (2010). *Business Analysis Glossary from A to Z*. Retrieved 07 July 2010, from <http://www.modernanalyst.com/Resources/BusinessAnalysisGlossary/tabid/231/Default.aspx>

Norshuhada, S., & Shahizan, H. (2010). *Design Research on Software Development Constructing and linking Research Question, Objectives, Methods and Outcomes*. Penerbit: Universiti Utara Malaysia.

Odlyzko, A. (2001). *Internet Pricing and the History of Communications*. Retrieved 07 July 2010, from <http://www.dtc.umn.edu/~odlyzko/doc/history.communications1b.pdf>

PC Encyclopedia. (2010). *Definition of Online Communications*. Retrieved 7 July 2010, from http://www.pcmag.com/encyclopedia_term/0,2542,t=online+communications&i=60733,00.asp

Tanaka, T., Matsumura, K., & Fujita, K. (2008). Unconsciously Harmonized Online Communication Based on Uninterruptibility Estimation of Interaction Partners. *Computer Science*, 5068, 77 – 85.

Uebersax, J. (2006). *Likert scales: Dispelling the confusion. Statistical Methods for Rater Agreement*. Retrieved 07 July 2010, from <http://ourworld.compuserve.com/homepages/jsuebersax/likert.htm>

Vaishnavi V & Kuechler B (2004). *Design Research in Information System [Electronic Version]*. Retrieved 20 July 2010, from

<http://www.isworld.org/Researchdesign/drisISworld.htm>

Vuksanovic, I., Zovko-Cihlar, B & Boras, D. (2007). M-Learning in Croatia: Mobile Multimedia Systems for Distance Learning. *Journal of ELMAR*, 12, 207-210.

Weerd, I. v. d. (2005). *WEM: A Design Method for CMS based Web Implementations*. Retrieved 13 July 2010, from <http://www.cs.uu.nl/research/techreps/repo/CS-2005/2005-043.pdf>

Zucker. D. (2003). *Teaching and Learning Online Communication, Community and Assessment*. Amherst, Massachusetts: University of Massachusetts Amherst.